

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Listing of Claims:

Claim 1 (Currently Amended): A method of active queue management, for handling prioritized traffic in a packet transmission system, the method comprising:

providing differentiation between traffic originating from rate adaptive applications that respond to packet loss, wherein traffic is assigned to one of at least two drop precedent levels in-profile and out-profile;

preventing starvation of low prioritized traffic;

preserving a strict hierarchy among precedence levels; ~~and~~

providing absolute differentiation of traffic; and

reclassifying a packet of the traffic of the packet transmission system, tagged as in-profile, as out-profile, when a drop probability assigned to the packet is greater than a drop probability calculated from an average queue length for in-profile packets.

Claim 2 (Currently Amended): A method of active queue management for handling prioritized traffic in a packet transmission system, the method comprising:

providing differentiation between traffic originating from rate adaptive applications that respond to packet loss, in which packets of traffic are ~~is~~ assigned to one of a plurality of drop precedence levels,

using a modified random early detection in and out RIO to calculate RIO drop probabilities,

using a load tolerant random early detection in and out ltRIO to calculate ltRIO drop probabilities,

using a weighted random early detection WRED to calculate WRED drop probabilities,

creating a plurality of threshold levels for an average queue length, by applying the RIO, ltRIO and WRED drop probabilities to the plurality of drop precedence levels, ~~and~~ setting all maximum threshold levels to a same value, and reclassifying or dropping the packets of the traffic in a queue of the transmission system by using the plurality of threshold levels and the maximum threshold levels of the queue.

Claim 3 (Previously Presented): The method as claimed in claim 1, further comprising:

providing absolute differentiation if a prioritized traffic is fully controlled and relative differentiation if the prioritized traffic is not fully controlled.

Claim 4 (Currently Amended): The method as claimed in claim 1, ~~wherein there are at least two drop precedence levels, in-profile and out-profile, said method~~ further comprising:

~~reclassifying a packet, tagged as in-profile, as out-profile, when a drop probability assigned to the packet is greater than a drop probability calculated from an average queue length for in-profile packets, and~~

discarding a packet, tagged as out-profile, when a drop probability assigned to the packet is greater than a drop probability calculated from an average queue length for out-profile packets.

Claim 5 (Previously Presented): The method as claimed in claim 4, wherein:

a maximum threshold value for the average queue length for out-profile packets is
max_th_out,

a maximum threshold value for the average queue length for in-profile packets is
max_th_in, and

max_th_out is set to a greater value than max_th_in.

Claim 6 (Previously Presented): The method as claimed in claim 2, wherein,
a maximum threshold value for the average queue length for in-profile packets is
max_th_in,

a minimum threshold value for the average queue length for in-profile packets is
min_th_in, and

a maximum drop probability for packets marked as in-profile is max_p_in,

said method further comprising:

using a set of threshold parameters, including max_th_in, min_th_in, and max_p_in,
instead of random early detection RED parameters, to determine whether an in-profile packet
should be tagged as out-profile.

Claim 7 (Previously Presented): The method as claimed in claim 6, said method
further comprising:

setting a plurality of maximum threshold parameters max_th#, including max_th_in
and max_th_out, to a same value.

Claim 8 (Previously Presented): The method as claimed in claim 6, wherein there are
three levels of drop precedence, said method further including:

calculating an average queue length for each level of drop precedence based on packets tagged with a corresponding level and packets tagged with a higher level of drop precedence.

Claim 9 (Previously Presented): The method as claimed in claim 8, further comprising:

assigning a unique threshold to each of the two highest prioritized precedence levels, said unique threshold being used to determine when a packet is to be tagged with a lower precedence level, and

providing a relative differentiation among said three levels when the average queue lengths for the two highest precedence levels exceeds both thresholds.

Claim 10 (Previously Presented): The method as claimed in claim 9, further comprising:

providing more than three drop precedence levels, and

employing an average queue length parameter for each drop precedence level with associated minimum threshold parameters $min_th\#s$ and maximum drop probability values $max_p\#s$.

Claim 11 (Previously Presented): The method as claimed in claim 10, wherein there are eight drop precedence levels.

Claim 12 (Previously Presented): The method as claimed in claim 10, wherein there is a single minimum threshold th_in , for all precedence levels such that no packets are dropped if the average queue length is less than th_in .

Claim 13 (Previously Presented): A method of active queue management for handling prioritized traffic in a packet transmission system, configured to provide differentiation between traffic originating from rate adaptive applications that respond to packet loss, wherein traffic is assigned one of at least a first and second drop precedent level, namely in-profile and out-profile, said method including of:

calculating an average queue length avg_ql ;

assigning minimum thresholds min_th_in and min_th_out , for in-profile packets and out-profile packets respectively, and a maximum threshold max_th ;

retaining all packets with their initially assigned drop precedent levels while the avg_ql is less than, or equal to, a threshold th_in ;

assigning a drop probability to each packet, determined from the average queue length;

retaining all packets while the avg_ql is less than the th_in ; and

dropping packets in accordance with their assigned drop probability; wherein

max_p_out is greater than max_p_in , max_p_out being the maximum drop probability of packets marked as out-profile and max_p_in being the maximum drop probability for packets marked as in-profile.

Claim 14 (Previously Presented): The method as claimed in claim 13, further comprising:

applying said method to a FIFO queue.

Claim 15 (Previously Presented): The method as claimed in claim 13, further comprising:

dropping a packet if avg_ql is $> \text{max_th}$, when a packet arrives;

calculating an average queue length for a packet tagged as in-profile avg_ql_in , and, if $\text{avg_ql_in} > \text{th_in}$ and $\text{min_th_in} < \text{avg_ql}$, calculating a probability of dropping a packet tagged as in-profile P_{in} and dropping or retaining said in-profile packet in accordance with a value of P_{in} ;

calculating a probability of dropping a packet tagged as out-profile P_{out} if $\text{min_th_out} < \text{avg_ql}$, and dropping or retaining said out-profile packet in accordance with a value of P_{out} .

Claim 16 (Previously Presented): The method as claimed in claim 13, further comprising:

employing a plurality of drop precedence levels, greater than two, and deriving an average queue length for each drop precedence level.

Claim 17 (Previously Presented): The method as claimed in claim 15, further comprising:

setting max_th for each drop precedence level to the same value.

Claim 18 (Previously Presented): The method as claimed in claim 16, wherein there are three levels of drop precedence, further comprising:

calculating an average queue length for each level of drop precedence based on packets tagged with the corresponding level and packets tagged with a higher level of drop precedence.

Claim 19 (Previously Presented): The method as claimed in claim 18, further comprising:

assigning a unique threshold to each of the two highest prioritized precedence levels, said unique thresholds being used to determine when a packet is to be tagged with a lower precedence level, and

providing a relative differentiation among said three levels when the average queue lengths for the two highest precedence levels exceeds both thresholds.

Claim 20 (Previously Presented): The method as claimed in claim 19, further comprising:

providing more than three drop precedence levels; and

employing an average queue length parameter for each drop precedence level with associated thresholds min_th#s and max_p#s.

Claim 21 (Previously Presented): The method as claimed in claim 20, wherein there are eight drop precedence levels.

Claim 22 (Previously Presented): The method as claimed in claim 20, wherein there is a single minimum threshold, th_in, for all precedence levels such that no packets are dropped if the average queue length is less than th_in.

Claim 23 (Previously Presented): A telecommunications system for transmission of packet data, wherein said telecommunications system employs a method of active queue management as claimed in claim 1.

Claim 24 (Previously Presented): A telecommunications system as claimed in claim 23, wherein said telecommunications system is an internet.

Claim 25 (Previously Presented): A router for use with a telecommunications system, as claimed in claim 23, wherein said router employs the method of active queue management.